

# **2004 Agricultural Water Use Report**

## **Summary of Progress and Future Needs To Reduce Risks to Aquatic Habitat and Increase Agricultural Irrigation In Maine**



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## **Executive Summary**

In 2004 the Department of Agriculture continued to collect information on water used by farmers during the irrigation season from October 2003 to September 2004. In addition, the Department did an assessment of the impact imposing seasonal withdrawal thresholds would have on selected farms who withdraw water directly from rivers, streams and brooks.

Drought is the number one farm production risk. Droughts have been known to occur in 3 to 4 years of each decade since the 1960's. *The most recent drought damage in a two-year period from 2000 to 2001 resulted in over 32 million dollars of crop losses* Resolving water supply conflicts, especially during droughts, is the number one issue facing agricultural producers in Maine.

*Irrigation in Maine continues to increase, and will need to do so into the future.* The number of farmers irrigating has increased 3.4% from 1997 to 2002. More small farmers with less than 10 acres are irrigating, jumping 40% from 638 to 897 respectively. Since 1997 overall irrigated acreage has declined slightly, from 22,229 acres to 19,703 acres, primarily due to the continuing loss of potato farmers in Aroostook County.

*In 2004, natural rainfall limited the need for irrigation.* The number of irrigation sources using water declined from 78 in 2003 to 37 in 2004. The amount of water used also declined compared to 2003. Total water used in Wild Blueberries in Washington County was the highest use of irrigation in both years (Table 1). Large dairy operations in Kennebec County accounted for the majority of water used in that county while turf operations accounted for the majority of use in York, Oxford and Cumberland counties. The greatest use of water for irrigation occurs in the months of July and August (Graph 1). Some water is also used in May for frost control, and in November and December for cranberry flooding.

Based on a study of farmers using streams, if low flow regulations are put in place today, eighteen (18) of the thirty three (33) farmers currently in the water reporting program will be considered at risk of not having access to water during low flows. The low flow standard tested was either the August Median or Aquatic Base Flows. Before coming to an accurate low flow regulatory number extensive research is required including field study and site-specific flow data along with site-specific ecological field studies.

The Department of Agriculture is continuing to help farmers put in new sustainable water sources. Bond funds from 2002 and 2003 have provided 75% cost share up to \$60,000 to fund new wells or ponds. Currently the Department has distributed just over \$1.7 million dollars for over 85 projects located throughout the state. Over 4000 acres of farmland will be protected from drought, representing about 10 million dollars in annual crop value.

A substantial number of these projects have assisted farmers in reducing use of streams by building ponds or wells. Forty-five (45) farms have reduced use of direct withdrawals by putting in a new pond or well, while 18 farms have eliminated use of the streams altogether.

In Aroostook County three issues persist regarding water use. These include:

1. Multiple users on single watersheds.
2. Need for wetland development for new sources.
3. Regional studies on aquifer mapping.

In DownEast Maine, the State Atlantic Salmon Commission, Maine Wild Blueberry Commission and others are working on solutions to the issues raised by the listing. The largest wild blueberry grower, Cherryfield Foods, has been instrumental in developing wells to minimize the impact on streams. They have moved up to 95% of all water withdrawals to wells or their own ponds in the past 10 years, investing millions of dollars to do so.

The Maine Department of Agriculture's Water Management Advisory Committee, made up of irrigating farmers and consultants, put together a policy paper to assist DEP in its development of the low flow regulations. The position of the Department at this time includes:

1. Continued support for solutions rather than regulation. Cost share program can be a model to adopt. Minimize permitting burdens for alternative sources.
2. Use of the Aroostook Policy is a good model for assisting farmers to solve problems in local areas.
3. Implement site-specific standards only for those water bodies where DEP has determined that the cumulative use will impact aquatic life and other uses.
4. Farmers who fall under the standards must be assured of adequate water supplies for plant needs during droughts or provide for long term storage solutions or compensatory damages for losses due to drought.
5. Protect the Riparian Common Law of water use.
6. Cannot support natural free-flowing or seasonality figures due to lack of science.

The continued bond funding for the cost share program is of highest priority in the recommendations of the Blaine House Summit on Natural Resource Industries in 2004 and the Governor and Legislature are beginning to work on that bond package.

Maine farmers have done more in the last 15 years to help solve the issues concerning how to deal with droughts than any other user group. They continue to work on solutions, primary of which is to find alternative sources and to utilize a small portion of the huge water provided by snow melt and spring rains. State financial and technical support is of primary importance for the foreseeable future, as federal funding for increasing irrigation cannot be relied upon.

## **Introduction**

The Maine Department of Agriculture, as part of its responsibilities under the Water Use Reporting Law, provides the following report on the status of water use by farmers for 2004.

In 2004 the Department continued to collect information on water used by farmers during the irrigation season from October 2003 to September 2004. In addition the Department did an assessment of the impact imposing seasonal withdrawal thresholds would have on selected farms who withdraw water directly from rivers, streams and brooks.

Also provided in this report is a summary of the policy and recommendations of the Commissioner of Agriculture's Agricultural Water Management Advisory Committee regarding imposition of low flow standards on farm irrigators in Maine. The Committee met in the spring of 2004 to develop a policy statement in order to assist the Department of Environmental Protection in drafting a low flow standard rule.

## **Short History of Agricultural Irrigation Development in Maine**

Irrigation in Maine has been critical to the success of farms. Drought is the number one farm production risk. Droughts have been known to occur in 3 to 4 years of each decade since the 1960's. *The most recent drought damage in a two-year period from 2000 to 2001 resulted in over 32 million dollars of crop losses<sup>1</sup>.*

While drought is a major risk, historically, farmers in Maine have been slow to adopt irrigation due to the lack of research on impact of irrigation on crop improvement, and lack of investment capital. The total number of irrigating farmers up to 1997 was 10.9% of all Maine farms, and 5.2% of all harvested acres.

Since 1987, Maine farmers have been increasing support for irrigation research and adopting use of irrigation. Potato and Wild Blueberry farmers have conducted research that has proven the value of supplemental irrigation on the quality and quantity of those crops<sup>2</sup>. A number of diversified vegetable, small fruit and nursery crop farmers have adopted micro irrigation systems based on research and development of drip irrigation technology. Cranberry farming has increased in Maine, adding over 250 new acres, a crop that requires water for survival.

*Irrigation improves the economic conditions of farmers.* The market value of crops increases due to improvements in quality and quantity of yields. For potatoes, farmers who irrigate have averaged 291.5 cwt per acre versus 262.8 cwt per acre for non-irrigators<sup>3</sup>. Wild

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<sup>1</sup> Growing Agriculture, Sustainable Agricultural Water Source and Use Policy and Action Plan, Maine Agricultural Water Management Advisory Committee, March 2003 pg A2-20.

<sup>2</sup> Risk Management Strategies in Humid Production Regions: A Comparison of Supplemental Irrigation and Crop Insurance Timothy J. Dalton, Gregory A. Porter and Noah G. Winslow 2003.

<sup>3</sup> 2002 Census of Agriculture, Table 33.

blueberry farmers have also shown increased yields, but more importantly, have shown more year-to-year consistency in yields. This consistency has proven beneficial to maintain market share in a competitive industry.

*Irrigation in Maine continues to increase, and will need to do so into the future.* The number of farmers irrigating has increased 3.4% from 1997 to 2002. More small farmers with less than 10 acres are irrigating, jumping 40% from 638 to 897 respectively. Since 1997 overall irrigated acreage has declined slightly, from 22,229 acres to 19,703 acres, primarily due to the continuing loss of potato farmers in Aroostook County.<sup>4</sup>

The following are the agricultural regions in Maine and their major reasons for needing irrigation.

- **DownEast**
  - Maintain consistent wild blueberry yields and quality. Value of irrigation for frost control, first year growth, and consistent year-to-year yields. The majority of high quality acreage will need to be irrigated.
- **Aroostook County**
  - Preserve high quality processing market for potatoes. A 35% increase in irrigated acreage is necessary.
- **Central Maine**
  - Preserve high quality processing market for chipping potatoes. All potato acreage will need to be irrigated.
- **Southern Maine**
  - Saving farmland in a high development region will become critical. Only irrigated acreage of high value crops will be profitable in the future.

### **Key Issue Facing Maine in Agricultural Water Management Policy Development**

Resolving water supply conflicts, especially during droughts, is the number one issue facing agricultural producers in Maine. Farmers need supplemental water to irrigate crops during agricultural droughts. The natural environment needs water to keep streams flowing and aquatic organisms alive. The State of Maine is moving towards development of a low flow standard for streams and lakes. This low flow limit will determine the level of water needed to maintain aquatic organisms in those water bodies. This limit will also cause a number of farmers to lose a water source for irrigating crops during the summer months and especially during droughts.

Hundreds of billions of gallons of water fall from the sky in winter and spring in Maine, providing plenty of potential water for all uses during the typically drier summer months. The

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<sup>4</sup> Census of Agriculture, 2002

major way to prevent conflicts in water needs during the spring and summer is to capture the spring runoff in reservoirs and in groundwater.

The remainder of this report researches the level of the potential conflict, and what is being done in 2004 to resolve the conflicts.

## **Agricultural Water Use, 2003 and 2004**

The water use reported in this summary is the result of those farms that needed to comply with the water reporting requirements. This includes any farm that is withdrawing water of 20,000 gallons per day (less than one acre inch) or more, or in certain other situations outlined in the law. These potentially would be considered farms where the risk of setting low flow standards would impact them the most. The purpose of reporting is to get a handle on how much water is used by agriculture compared to other uses, and to try to determine areas in the state where water conflicts might occur.

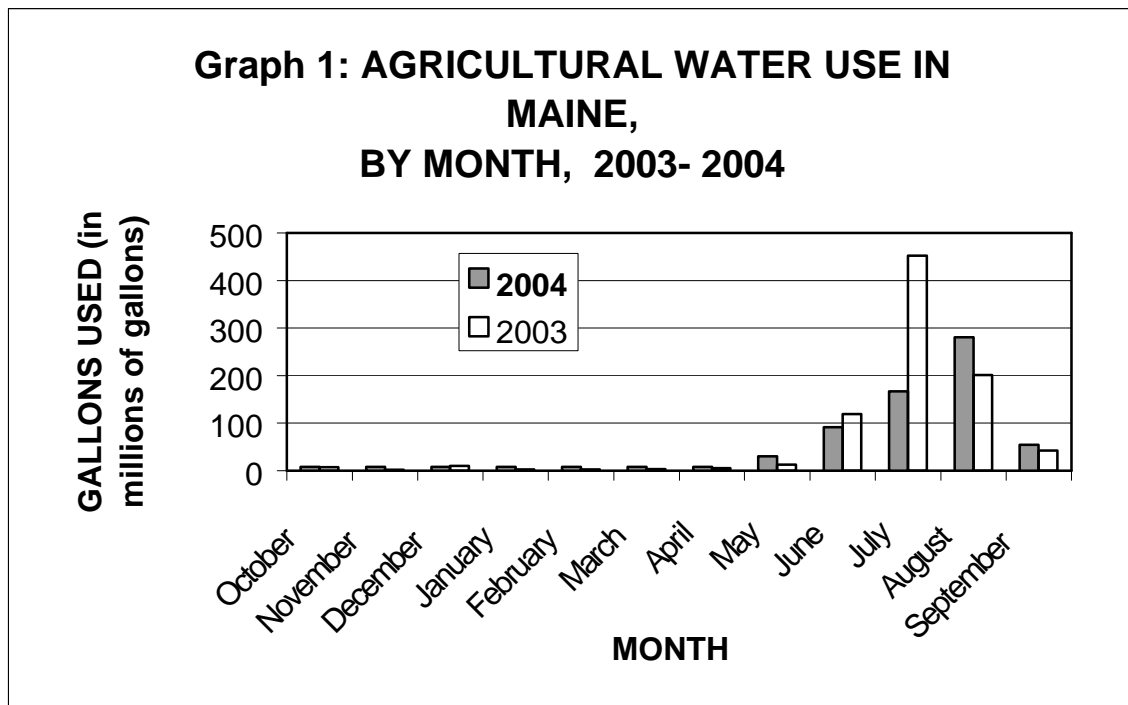
In 2004, natural rainfall limited the need for irrigation. The number of irrigation sources using water declined from 78 in 2003 to 37 in 2004. The amount of water used also declined compared to 2003. Total water used in Wild Blueberries in Washington County was the highest use of irrigation in both years (table 1). Large dairy operations in Kennebec County accounted for the majority of water used in that county while turf operations accounted for the majority of use in York, Oxford and Cumberland counties.

**Table 1: Maine Farms Water Use By County Region**

<b>County</b>	<b>Gallons Used</b>	
	<b>2004</b>	<b>2003</b>
Washington	549,439,022	581,965,980
Kennebec	105,136,500	27,760,122
York	48,455,600	77,547,100
Aroostook	8,693,100	69,615,943
Oxford	4,800,000	7,554,094
Cumberland	2,137,200	49,486,200
Franklin	683,760	377,730
Penobscot	0	23,004,000
Androscoggin	0	14,502,796
Lincoln	0	8,116,000
Sagadahoc	0	462,500
Waldo	0	445,350
Somerset	0	251,000
Hancock	0	128,000
<b>Total All Counties</b>	<b>719,345,182</b>	<b>861,216,815</b>

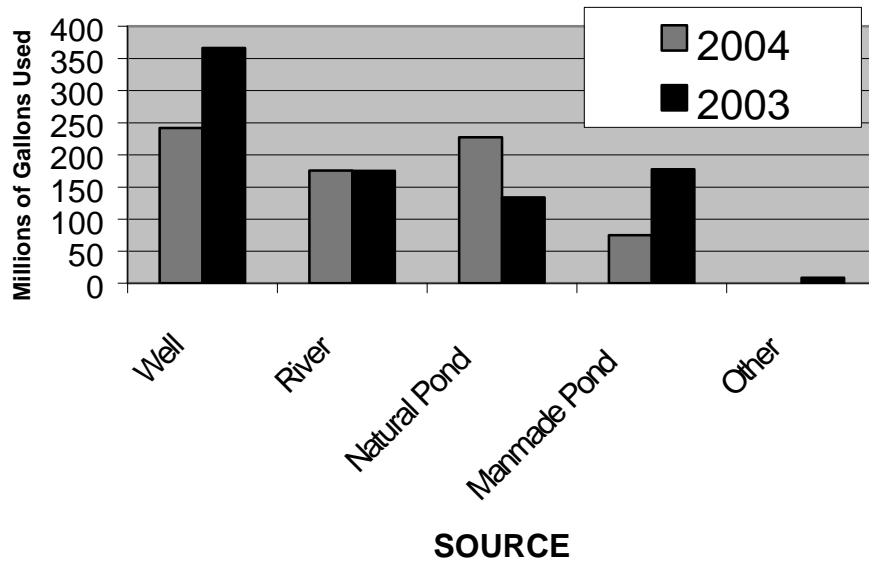


The greatest use of water for irrigation occurs in the months of July and August (Graph 1). Some water is also used in May for frost control, and in November and December for cranberry flooding.



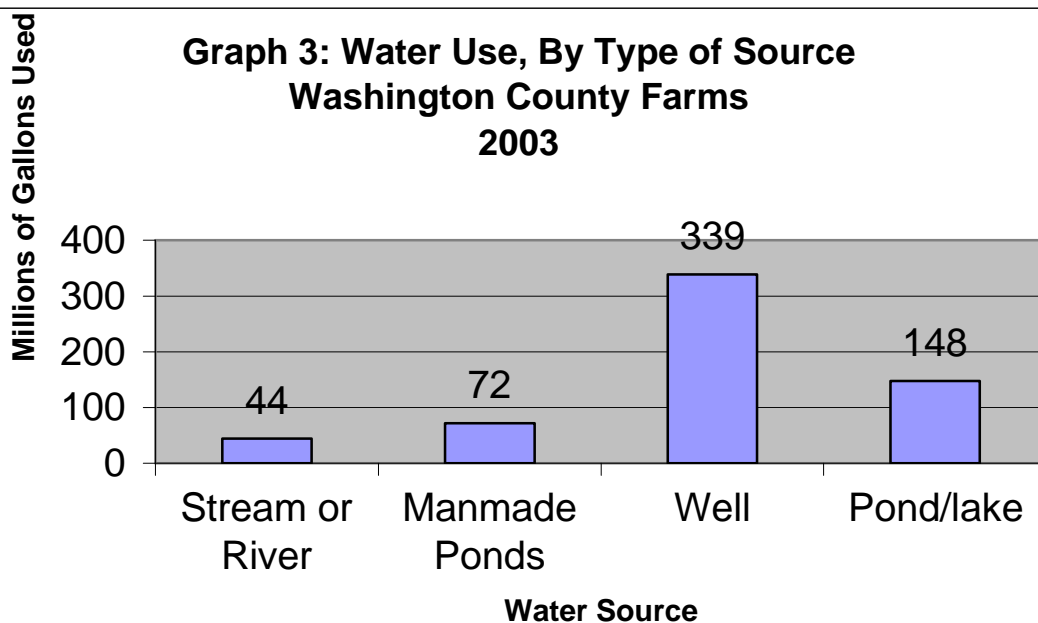
Of the farmers who need to report their water use, most use wells or natural ponds for water (Graph 2). In the case of wild blueberries, a large percentage of use has turned to wells in the past five years (Graph 3), to meet the intent of the DownEast Salmon River Water Use Management Plan.

**Graph 2: AGRICULTURAL WATER USE IN MAINE  
BY TYPE OF SOURCE 2003-2004**



What is clear from the data collected is that Maine farmers use very little water compared to other users. Farmers are also well on their way to reducing direct impacts on streams, as noted by the hundreds of thousands of dollars of investment made by Wild Blueberry companies and other farmers in developing alternative sources and tapping groundwater by developing wells (Graph 3).

**Graph 3: Water Use, By Type of Source  
Washington County Farms  
2003**



## **Risk Assessment for Agricultural Producers Who May Be Impacted By Impending Low Flow Standards**

During the summer of 2004, the Maine Department of Agriculture undertook a research project, with the funding support of the Maine Department of Environmental Protection and U.S. EPA. The project was to determine the number of farmers who may be at risk of losing their water supply if a low flow limit was placed on the streams from which they currently irrigate.

The farms used in the study were actual farms required to report their water use because they use more than 20,000 gallons per day directly from rivers, streams and lakes identified at risk. Forty-eight (48) water sources were studied, and of those sources, thirty three (33) were considered for the risk assessment.

### **Methods**

**Collecting GPS waypoints** – The farmers were contacted to request their assistance to help identify their source, and determine their risk level. A GARMIN 76 and 76C GPS units were used in order to mark the water source sites of various farmers. 25 waypoints were collected across the state. Waypoints were transferred from the GPS unit to the computer through a USB port and a program called Map Source. Map Source read the GPS unit and displayed saved points. The Map Source file was converted to a .txt file and imported it to an Access database table. This table contained the waypoints in UTM (longitude and latitude) coordinates, and those coordinates were later used in ArcGIS.

**Delineation of Watersheds** – Watersheds were delineated and drainage areas calculated, and elevations established using a tool in ArcMap called “Hydrology Modeling”. Hydrology Modeling is a program that enables the user to produce watersheds based on flow direction and flow accumulation over a specified area. A Digital Elevation Model (DEM), was downloaded in 24K tile size from the MEGIS data catalog online.

GPS waypoints were placed on maps and the ArcMap program was used to calculate flow directions, flow accumulations and finally, the total amount of watershed area above the withdrawal points on the stream in question. In order to calculate the area, a considerable amount of knowledge of the program and its processes was needed. The program is normally only available, with trained personnel, from state and federal agencies and consultants.

**Developing Low Flow Equations** - Once the elevations and watershed areas were calculated for the withdrawal points, it was necessary to convert the units in that program to those necessary to develop a low flow equation for the stream in question. The area in square meters had to be converted to square miles, and the elevation in meters had to be converted to feet. We used the following conversion factors:

$$1 \text{ sq. meter} = 3.86102159 \times 10^{-07} \text{ sq. mi}$$

$$1 \text{ meter} = 3.28 \text{ feet}$$

With the areas and average elevations converted to the proper units, the next step was to plug these numbers into low flow equations. An Excel spreadsheet was developed to make the calculations easier. The low flow equations used were for calculating 7Q10, August Median Flow (AMF), and Aquatic Base Flow (.5ABF). Each equation was put into Excel, and three low flow numbers were generated based on these equations for each watershed created:

$$7Q10^5 = 0.023(A)^{1.173} \cdot 10^{2.54(SG)}$$

$$AMF^6 = 0.061(A)^{1.28} \cdot 10^{0.00059(E)}$$

$$ABF^7 = .5 \cdot A$$

These three equations calculated flow numbers in cubic feet per second (cfs). Rates of most irrigation pumps are in gallons per minute (gpm). So, in order for farmers to easily compare these low flow numbers to their pumping rates, the numbers were converted from cfs to gpm.

**Developing Watershed Maps** - Once the calculations were made for 7Q10, with its range of error (-34.5% to 52.6%), AMF, with its range of error (-32% to 68%), as well as .5ABF for each watershed, a map was created with ArcMap of just the farmer's watershed and a Digital Ortho-Quad aerial photograph underneath so the farmer could see where his farm was as well as the extent of his watershed. Text was added of the three low flow numbers determined for that specific watershed and placed on the map and sent to the farmer along with a letter explaining the watershed map.

**Risk Assessment** – The final step in the process was to take all the information collected over the summer including: visual observations from the site visits, known pumping rates, low flow numbers, and the actual drainage area or watershed size, and assess each site's risk of being impacted by low flow regulations. Each was assessed as a 1, 2 or 3. 1 meaning low/no risk, and 3 meaning high risk. The description of each risk category is shown in table 2

Example of watershed map created to calculate water supply for a particular water withdrawal point



Drainage Area = 1.45 sq. mi .5 ABF = 331.82 gpm  
7Q10 = 18 gpm (12-28) AMF = 64 gpm (41- 105)

<sup>5</sup> USGS Report SIR-2004-5026 "Estimating Monthly, Annual, and Low 7-Day, 10-Year Stream flows for Ungauged Rivers in Maine". Average standard error of prediction -34.5% to 52.6%.

<sup>6</sup> From USS Water Resources Investigations Report 03-4225 "August Median Stream flow on Ungauged Streams in Eastern Aroostook County, Maine". Average standard error of prediction -38% to 62%.

<sup>7</sup> Used on ungauged streams when AMF is unknown and a default number of .5 cubic feet per second per square mile is used.

**Table 2: Risk Assessment Categories**

Risk Level	Description
1	<b>Little to no risk of not having enough water after regulations are put into place. A very large watershed and relatively low pumping rates generally characterize this group.</b>
2	<b>Potential risks of not having enough water after regulations are put into place. Medium sized watersheds and average pumping rates generally characterize this group. Amount of risk would be dependant upon amount of rainfall, acres being irrigated and also the farmer's management practices.</b>
3	<b>High risks of not having enough water after regulations are put into place. Small watersheds and high pumping rates generally characterize this group. They will not have enough water and will need to switch to alternate water sources. We also observed that the water sources were visually small.</b>

## Results

**Risk Assessment-** The results of the risk assessments are summarized in table 3. Eighteen (18) of the thirty three (33) farmers were considered at risk of not having access to water during low flows, if the low flow limits of August Median or Aquatic Base Flows were used in the regulations. The key information required to do the risk assessment is based on the farmer' pumping rate and timing of the irrigation activities. This assessment, for the most part, fits with the farmer's perception of risk based on actual drought situations.

However, some of the farmers show a lower perception of risk. This is because, during low flow periods, they manage the withdrawals. They typically do not pump at the highest rates. Some of the farmers also have deep pools in the streams from which to draw water. These pools act as reservoirs in the river and farmers find they can pump for a few hours during a drought. Also, an agricultural drought is different than a stream drought, meaning that when soil moisture

is low, river water may not be low. Many times farmers note that managing the withdrawal is possible.

Under a scenario where a low flow limit is placed on the stream, all these farmers would have to have alternative sources for the periods in July and August. The cost for these new sources would have to be determined.

**Evaluation of Farmers attitude toward irrigation during droughts-** After visiting with several farmers this summer it became obvious that farmers are very conscious of their water source and how much water they pump. Farmers continuously observe their water flow and the impact their pump is having on their water source. Pumping water costs farmers money and reducing costs is a high priority for all Maine farmers. We also observed that farmers are very open to alternative water sources, however they do not have the capital to build ponds or drill wells.

**Evaluation of Low Flow Equations-** This summer we have had extensive experience calculating and reviewing three different low flow equations. We did work with 7Q10, August Median Flow, and .5 Aquatic Base Flows. We also had the opportunity to hear much discussion about these equations and reaching a decision about a statewide low flow policy. However, there is no one easy solution for this mandate. Each low flow equation lacks accuracy and only relates to a specific set of water source types. The 7Q10 equation is only accurate for drainage areas over 10 square miles, AMF is only accurate on gauged streams and .5 ABF is an approximation for water sources that are ungauged and lacking solid data. Before coming to an accurate low flow regulatory number extensive research is required including field study and site-specific flow data along with site-specific ecological field studies. This requires a lot of work to be done by many different agencies but the State of Maine should not rest satisfied until there is proven accuracy.

**Table 3: Risk Assessment of Farmers in Water Law Reporting Program Withdrawing  
Directly From Streams.**

ID	DA (sq mi)	Pump Rate	Farmer's Perception of Risk	Department Assessment of Risk	.5ABF (gpm)	7Q10 (gpm)	<u>7Q10</u> <u>low</u>	<u>Range</u> <u>high</u>	AMF (gpm)	<u>AMF</u> <u>low</u>	<u>Range</u> <u>high</u>
1	18	350	1	1	4090.91	309.09	204.55	472.73	2245.45	1390.91	3636.36
34	19.3			1	4386.36	336.36	200.45	513.64	1750	1086.36	2836.36
33	76			1	17272.73	1681.82	1101.82	2568.18	16227.27	10059.09	26286.36
7	206.5	1200	2	1	46931.82	5427.27	3554.55	8281.82	72004.55	44640.91	116645.45
6	40	500- 600	1	1	9090.91	790.91	518.18	1209.09	7495.45	4645.45	12140.91
2	51.1	350	1	1	11613.64	1054.55	690.91	1609.09	9086.36	5631.82	14718.18
25	88			1	20000	1995.45	1306.82	3045.45	20336.36	12609.09	32945.45
26	UTD			1							
27	UTD			1							
28	93			1	21136.36	2131.82	1396.36	3254.55	12640.91	7836.36	20477.27
29	UTD			1							
30	337			1	76590.91	9640.91	6315	14713.64	119918.2	74350	194268.18
31	91			1	20681.82	2077.27	1360.45	3168.18	20077.27	12450	32527.27
32	87			1	19772.73	1968.18	1289.09	3004.55	19031.82	11800	30831.82
4	1161.3	400		1	366205	60441	39591	92232	500862	310536	811405
11	2.7			2	613.64	31.82	22.73	50	131.82	81.82	213.64
5	18		2	2	4090.91	309.09	204.55	472.73	3704.55	2295.45	6000
10	14	1500	1	2	3181.82	231.82	150	354.55	1345.45	836.36	2181.82
12	45			2	10227.27	909.09	595.45	1386.36	5804.55	3600	9404.55
15	4.41	1000	1	2	1004.55	59.09	40.91	90.91	268.18	168.18	436.36
18	4.93	360	1	2	1122.73	68.18	45.45	104.55	268.18	168.18	436.36
19	5.27	360	1	2	1200	72.73	45.45	109.09	290.91	181.82	472.73
20	1.45			2	331.82	18.18	13.64	27.27	63.64	40.91	104.55
21	3.5			2	795.45	45.45	31.82	68.18	309.09	190.91	500
22	2.8		1	2	636.36	36.36	22.73	54.55	263.64	163.64	427.27
23	11.08			2	2518.18	177.27	118.18	272.73	922.73	572.73	1495.45
13	1.6	900		3	363.64	18.18	13.64	27.27	68.18	40.91	109.09
14	6.2	1200		3	1409.09	90.91	59.09	140.91	381.82	236.36	618.18
8	0.4	25	1	3	90.91	4.55	4.55	9.09	18.18	9.09	27.27
3	4.25	300- 400	1	3	968.18	59.09	40.91	90.91	259.09	159.09	418.18
16	1.16	800		3	263.64	13.64	9.09	22.73	45.45	27.27	72.73
9	2.2	550		3	500	27.27	18.18	40.91	122.73	77.27	200
17	2.01	300	1	3	459.09	22.73	13.64	36.36	90.91	54.55	145.45

## **Status of Non-regulatory Solutions- Based Programs To Deal With Drought**

### **Agricultural Water Management Planning**

Planning for water use on a farm is the first step in dealing with drought. Plans include developing water budgets for the acreage and type of crop to be grown, and assessing the type of sources and amount of water available from those sources. Many farms do not have the capital to meet all irrigation needs, and therefore must space out investments over time. A number of agencies are assisting farmers in getting plans completed.

The Maine Department of Agriculture initiated a program to help farmers develop water management plans. Since 2003 over 60 farms have participated, and most have gone on to apply for the cost share program to develop new sustainable water sources.

The Maine Potato Board has developed a grant program to help Aroostook County potato farmers to develop whole farm water management plans. Over 8 farms are currently participating and local environmental engineering firms are providing the technical assistance to help put the plans together. Plans typically cost around \$3,000 to complete.

Washington County Soil and Water Conservation District is in its 4<sup>th</sup> year of assisting wild blueberry farmers in developing water management plans through a National Fish and Wildlife Foundation grant. Over 20 farms are currently participating and 14 have completed plans.



## **Aroostook Water and Soil Management Board**

The Regional Water Management Board in Aroostook County has been active in the past year assisting farmers in applying for cost share funds for new equipment technology with the USDA-NRCS EQIP and AMA program. In addition, the Board, in conjunction with the Maine Potato Board and DEP, has been working with farmers in the Prestile Stream area. A number of farmers need more water than the stream can provide. McCains Foods has been solicited to provide water from a waste treatment pond, lake Josephine, to help augment supplies for those farms. Finally, the Board has developed a plan of work for the next few years and included in the plan is to find additional funds to help farmers find high yield aquifer wells as a possible solution where no locations exist for pond development.

## **Agricultural Cost Share Assistance for Sustainable Water Source Development**

The Department of Agriculture is continuing to help farmers put in new sustainable water sources. Bond funds from 2002 and 2003 have provided 75% cost share up to \$60,000 to fund new wells or ponds. Currently the Department has distributed just over \$1.7 million dollars for over 85 projects located throughout the state. Over 4000 acres of farmland will be protected from drought, representing about 10 million dollars in annual crop value.

A substantial number of these projects have assisted farmers in reducing use of streams by building the new source. Forty-five (45) farms have reduced use of direct withdrawals by putting in a new pond or well, while 18 farms have eliminated use of the streams altogether.

In Southern Maine, the cost share program is providing a dual purpose. In addition to minimizing direct stream withdrawal, the funding has assisted farmers in keeping farmland from going to development.

## **Regional Water Policy Issues Remaining and Recommendations for Solutions**

### **Aroostook County**

In Aroostook County three issues persist regarding water use. These include:

4. Multiple users on single watersheds. The Prestile Stream and Aroostook River are two critical rivers with multiple farmers irrigating from those sources. A project is underway to determine the extent of the usage and what new water sources will need to be developed. Currently the Maine Potato Board is identifying farmers at risk and working with DEP and McCains Foods on solutions. In addition, The Maine Department of Agriculture's grant program has funded a number of new wells and ponds to help alleviate the pressure on those rivers.
5. Need for wetland development for new sources. In Aroostook County, very few locations are available to put in new ponds, and low value wetlands appear to be the solution. However, current regulations protecting wetlands create costly permitting requirements. State oversight of wetland development permits is necessary to reduce the costs and time involved in allowing for some wetland development for ponds.
6. Regional studies on aquifer mapping. Aroostook County is not known for high yield sand and gravel aquifers. However, some recent engineering technology can be employed to local bedrock aquifers that can produce enough volumes to help recharge ponds or run irrigation pumps directly. More study is needed to help find those areas near agricultural land.

### **DownEast**

The listing of the Atlantic Salmon through the Endangered Species Act has been a major concern for farmers needing to irrigate. While the State has developed and has been implementing its own salmon conservation plan and water use plan, the federal government is developing stricter requirements for preserving Atlantic Salmon. One such requirement, to maintain (aquatic) base flows above levels that do not occur naturally during most of the summer, would eliminate any use of streams and rivers for irrigation.

The State Atlantic Salmon Commission, Maine Wild Blueberry Commission and others are working on solutions to the issues raised by the listing. The largest wild blueberry grower, Cherryfield Foods, has been instrumental in developing wells to minimize the impact on streams.

They have moved up to 95% of all water withdrawals to wells or their own ponds in the past 10 years. They are currently monitoring water levels adjacent to wells to ensure their periodic, seasonal use does not have long-term detrimental effects on ground water supplies. Wild blueberry farmers have been at the forefront of looking for solutions, such as that of Cherryfield Foods work on well development. Other farmers are looking at pond development with well augmentation for recharge of ponds.

Another issue for DownEast is to determine what flows are really necessary to protect Atlantic Salmon habitat. Optimum flow modeling done to date indicates that these flows do not normally exist naturally. The USGS just completed a study of small watershed to refine the low flow estimation equations for the region. In addition, more gauging stations are being planned to help quantify the amount of water really available during the summer months.

## **Central Maine**

In Central Maine, potato farmers have been working diligently to put in new ponds to manage water. The one area in particular, the Kenduskeag watershed, has multiple farm users and during droughts this stream is unreliable. The farmers have utilized the State Sustainable Source Development Cost Share program as well as USDA-NRCS funds. Over 10 new ponds have been developed in the past three years. This program seems to be appropriate to solve the problems in that area. Further work is being done to identify suitable pond sites to meet farm drought risk management needs.

## **Southern Maine**

Four major issues face Southern Maine farmers. First, the small, scattered acres of prime farmland are being purchased at very high prices due to development pressure from sprawl. This situation has prevented farmers from purchasing land for farming, and leasing is becoming more prevalent. Secondly, the farmland must support higher property taxes; therefore only high value crops can be grown. The higher risk of failure due to drought must be mitigated. Thirdly, with sprawl comes neighbors and increased vandalism. Farmers are finding that irrigation equipment is targeted for vandalism due to the perception that irrigation is bad, or noisy or a nuisance. Forth, a number of water sources in southern Maine are very small streams that dry up in times of drought.

The solutions for southern Maine farmers are similar to other areas and include the development of ponds and wells. State cost share programs for new sources have been very helpful to those farms. Farmers also need to conserve water more, and new energy and water efficient systems are becoming the norm.

## **Statewide Policy Issues**

### **Implementation of Low Flow Standards Rulemaking**

The implementation of the upcoming Low Flow Standards and ability to enforce these regulations is at the forefront of concerns for Maine farmers. The development of these rules will cause increased costs for farmers and will likely reduce the amount of water a farmer could withdraw under their common law rights for reasonable use of water.

The Maine Department of Agriculture's Water Management Advisory Committee put together a policy paper to assist DEP in its development of these regulations. The following guiding principles are the position of the Commissioner of the Department of Agriculture and also that of the Maine Agricultural Water Management Advisory Committee. These were presented to DEP at the meeting in May for the purposes of development of draft water low flow standard rule:

1. Must continue to support Agriculture in Maine (minimize economic burden on farms to keep them profitable, and recognize water as a critical production component) and support solutions rather than regulation. Cost share program can be a model to adopt. Minimize permitting burdens for alternative sources.
2. Create a framework for the standards that relies on a voluntary, self-policing program that, for agriculture, is managed by the Department of Agriculture.
3. The Aroostook Policy is a good model to use. Major points - 1) This process only invokes flow limits on problem areas and 2) Puts the burden on establishing a physical low flow level and assisting with solutions on the state agencies, not just the individual farmer.
4. Implement site-specific standards only for those water bodies where DEP has determined that the cumulative use will impact aquatic life and other uses. For those sites, accept DEP established, scientifically based, water use standards that impact aquatic species, or habitat for endanger species. Develop watershed wide water management plans where a documented need exists.
5. Farmers who fall under the standards must be assured of adequate water supplies for plant needs. If a standard is implemented, farmers need protections, variances or a compensation program for losses. A standard invoked during drought conditions or for a legitimate reason must include a compensation program based on the value of a potential crop loss.

6. Must have language in the standards that show farmers have the right to continue to draw water (public perception issue).
7. Protect the Riparian Common Law of water use.
8. Cannot support natural free-flowing or seasonality figures due to lack of science.

In follow-up meetings with DEP and the Agricultural Council of Maine, two of the major concerns are what science is available to determine the low flow standard, especially for seasonal standards other than in August. The second concern is one of cost. Who will pay for the time and effort to determine the low flow limit on any particular water source?

## **Funding Sustainable Water Sources**

The Advisory Committee, through its prior report to the Governor, also recommended continued state involvement in cost sharing development of sustainable solutions by supporting well and pond development. The Governor also heard this through the Blaine House Conference on Natural Resources. Continued bond funding for the cost share program is of highest priority in the recommendations report from the summit. The advisory committee appreciates the past support of the legislature, Governor, DEP and the people of Maine for the inclusion of sustainable water source cost-share funds for farmers in the environmental bond packages.

## **Summary**

Revenue generated by Maine agriculture is economically important and necessary to this state. Agriculture is a part of this states culture, provides a diversity of wildlife habitat across the state and without water to reduce drought risk, agriculture will not be able to survive in the state of Maine

Farmers are one of the smallest groups of water users. However they face some of the most opposition concerning irrigation. Farmers are being pressured from all sides to remove their pumps from the rivers and streams. Some of the largest agricultural water users have made substantial efforts to move off of streams and rivers. However not enough state and federal money has been provided to assist them and smaller farms who lack the financial capacity to make this transition in such a short timeframe.

Maine farmers have done more in the last 15 years to help solve the issues concerning how to deal with droughts than any other user group. They continue to work on solutions, primary of which is to find alternative sources and to utilize a small portion of the huge water provided by snow melt and spring rains. State financial and technical support is of primary

importance for the foreseeable future, as federal funding for increasing irrigation cannot be relied upon.

Maine needs to clearly define what will be acceptable water use for irrigation in the next five years so that farmers have an idea where they need to be moving towards and also more resources will need to be provided for them to make these necessary changes.